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ABSTRACT

While the traditional role of television has been to transmit messages to mass audiences, more recent uses of television which allow face-to-face interaction may lead to new kinds of behavior by the parties involved. In an interactive situation, an individual's two types of tasks are presentational (presenting his own "line" or image) and responsive (providing feedback on the other individual's presentation). Based on a face-to-face interaction model of Irving Goffman, two experiments used television to manipulate the interaction. In the first, subjects watched themselves perform actions on television. The experimental group saw themselves after a delay of several seconds, the control group performed and watched simultaneously. The experimental subjects were surprised and discomforted, while the control group thought they looked as they had expected they would. This result supported the hypothesis that being presented with a "truer" self-image (one seen by others) was likely to be unpleasant. A second experiment examined whether believing a televisionally mediated situation to be responsive affects the way people feel about it and whether rules of face-to-face interaction carry over to the television medium. This experiment yielded thought-provoking but not significant results. (JK/MT)

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MEDIATED INTERACTION THROUGH TELEVISION -- WITH SELF AND OTHER

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Introduction

The traditional role of television is to transmit messages to mass audiences: we have become accustomed to thinking of television as essentially a one-way communicative process. We tend to talk about the "effects" of television: not of the impact of the viewer's behavior, in real time, on the activity he is perceiving within the TV set. Terms such as "dialogue," "interaction," "responsiveness," to the extent that we employ them with respect to television, have usually been intended to refer to some characteristic of the television message itself, not to any relationship between the viewer and the message.

Within the last decade or so more differentiated uses of television have begun to assume importance in several fields of activity, and the prospect is for further evolution to what will be termed in this paper "interactive" television. In Boston, for example, it is reported that psychiatrists are now treating patients 25 miles distant from them by the use of television.[1] The medical uses of television seem to be rising exponentially: a recent bibliography surveying the field mentions more than fifty items -- most of them very recent.[2] The percentage of school systems without closed circuit television systems is being overtaken, if it has not already, by those with. Research is underway to explore the uses of in-house hookups for large private corporate organizations.[3]

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[1]With the collaboration of the Massachusetts General Hospital and the Veterans Administration Hospital

[2]Kenney, Brigitte L. "Annotated Bibliography on Television and Videotape in Psychiatry." University of Mississippi Medical Center, Department of Psychiatry."

[3]Including work in which one of the authors of this paper is participating at Bell Northern Research in Ottawa.

Television is being employed for social action purposes in many communities. And so on: the list grows.

Eventually, with the perfecting of devices such as the Picture Telephone, and similar systems which are under development, with the growth of cable television and the spread of low-cost portable television camera-recorder units, we can look forward to the emergence, side by side with traditional mass television, of richly connected networks permitting visual interaction on a scale roughly commensurate with the telephone system.

The encroachment of interactive television and its assumption of a major role in communication systems raise many questions. Does the presence of the television link impose constraints on interaction? Does it, for example, make some kinds of exchange impossible? Is information reduced or increased? Are some patterns of interaction inhibited or facilitated? Do possibilities for entirely new kinds of interaction open up, as some persons have suggested? Are there systematic distortions, manipulative potentials, biases, etc. that inhere in the use of television?

In this paper, we are attempting to get at some of these questions, in a preliminary way, by explaining one theoretical avenue. A Goffman model of face-to-face interaction is considered in the perspective of the interactive television situation. The model is interpreted in communication theoretic notions of information and feedback. Two experiments based on derivations from the model are reported. Finally some implications of the findings are considered, and some of the unanswered questions concerning interactive television are discussed further.

Televisual Mediation and Purposive Behavior

The essential difference between the use of television for transmission of messages to masses of people, and its use for interpersonal interaction is that in the latter case, unlike the former, the information provided by the image on the screen may be immediately relevant to the activity the individual is engaged in. The individual can observe by television the effect of his own actions. Television becomes a relay in a feedback loop. The visual system of the individual is conjoined to that of the television component, and for some purposes can be analyzed as a single unit.

Smith[1] has used the feedback paradigm to study some implications of the use of television in a task situation demanding accurate manual coordination. Subjects were required to perform tasks involving the use of a pencil. Their only visual information about the activity of their hands was mediated by a television link. The experimenters found that subjects were able to adjust quite well to manipulations in the spatial dimension (re-positioning of camera, image reversal, etc.), but were unable to deal with temporal displacements (0.5 sec. delay of image). In the latter case their behavior became disorganized.

In our work, we decided it would be profitable to adapt the Smith approach to the study of interpersonal interaction. We wanted to find out if some of the concepts which are clearly applicable to the single-person task situation could lead to productive research with respect to the more

[1]Reported in Smith, K.U., and W.M. Smith. Perception and Motion: An Analysis of Space-Structured Behavior. New York: Saunders. 1962.

complex domain of interpersonal interaction. To make this step, we had first to consider how to define two essential concepts which underlay the Smith work.

(1) What is the task in which the individual is engaged in interpersonal communication?

(2) What feedback does he utilize, or is necessary to him, in order for him to carry out his task?

With these questions in mind, we looked at some of the available literature on face-to-face interaction. We discovered that an early Goffman model[1] supplies at least a useful point of departure, in that concepts of task, feedback and purposiveness emerge with sufficient clarity to lead to the posing of specific research questions.

> (Every person) tends to act out what is sometimes called a line -- that is, a pattern of verbal and nonverbal acts by which he expresses his view of the situation and through this his evaluation of the participants, especially himself.[2]

In this view, a basic task of the individual in the interpersonal context is to define for himself, and to have accepted by others, some acceptable value on himself as a person in a social context.

> The term face may be defined as the positive social value a person effectively claims for himself by the line others

[1]Goffman, Irving. "On Face-Work: An Analysis of Ritual Elements in Social Interaction," Psychiatry: Journal for the Study of Interpersonal Processes, 18(3), 1955, 213-31.

[2]Ibid.

> assume he has taken during a particular contact. Face is an image of self delineated in terms of approved social attributes.[1]

In order to have a value placed upon self, it is necessary for the individual to produce a sequence of behaviors from which others are able to make inferences concerning his claims to the desired social value. He projects an image of himself that he wants to have accepted. The sequence of behaviors he chooses is not unconstrained: his choice must follow for the most part rather well-defined rules of what can and cannot be expressed within a given situation. There are two kinds of rules which the individual must take into account in selecting his lines of behavior: (1) rules which determine what the situation is, and (2) rules concerning the choice of lines which are appropriate within the situation, given that it has been identified. The nature of the individual's task, and the relevance of feedback to the accomplishment of the task, can now be more precisely defined:

> A person may be said to...maintain face when the line he effectively takes presents an image of him that is internally consistent, that is supported by judgments and evidence conveyed by other participants, and that is confirmed by evidence conveyed through impersonal agencies in the situation.[2]

This theory of interpersonal behavior, and of the nature of the individual's task, accords with ordinary cybernetic definitions of purposive behavior. For example, purposiveness is given a time-dependent definition, as it is

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[1] Ibid.

[2] Ibid.

in the cybernetic framework of explanation:

> The person's face clearly is something that is not lodged in or on his body, but rather something that is diffusely located in the flow of events in the encounter and becomes manifest only when these events are read and interpreted for the appraisals expressed in them.[1]

Cybernetic notions of second-order feedback appear similarly to be expressed:

> A person...cathects his face; his "feelings" become attached to it. If the encounter sustains an image of him that he has long taken for granted, he will probably have few feelings about the matter. If events establish a face for him that is better than he might have expected, he is likely to "feel good"; if his ordinary expectations are not fulfilled, one expects that he will "feel bad" or "feel hurt."[2]

To summarize, having chosen an image or impression of himself which he wants to create, he must then "ensure that a particular expressive order is sustained -- an order that regulates the flow of events, large or small, so that anything that appears to be expressed by them will be consistent with his face." The choices he makes from his repertoire of possible behaviors depend (1) on his own initial perception of how well they will serve to convey the impression he desires to give, and (2) on the apparent success of his line of behavior in conveying such an impression, which he judges from the responses he sees in those with whom he is interacting.

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[1] Ibid.

[2] Ibid.

Total failure to find interactional confirmation of the effectiveness of his choice of behaviors should be expected to be highly upsetting:

> Felt lack of judgmental support from the encounter may take him aback, confuse him, and momentarily incapacitate him as an interactant. His manner and bearing may falter, collapse, and crumble.[1]

Feedback, it is thus posited, is a necessary condition for the completion of this part of the individual's task.

The presentation of his own image -- the task of creating a suitable impression of himself by allowing others to make appropriate inferences from his selection of behaviors -- is however only one half of the individual's task in the interactive situation. The second half is to respond appropriately to the presentation of the others with whom he is in interaction.

> Just as the member of any group is expected to have self-respect, so also he is expected to sustain a standard of considerateness; he is expected to go to certain lengths to save the feelings and the face of others present...The person tends to conduct himself during an encounter so as to maintain both his own face and the face of the other participants. This means that the line taken by each participant is usually allowed to prevail, and each participant is usually allowed to carry off the role he appears to have chosen for himself. A state where everyone temporarily accepts everyone else's line is established...Maintenance of face is a condition of interaction, not its objective.[2]

Collaboration in the maintenance of face achieves a minimal condition of mutual interaction (since without it, as seen, behavior becomes

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[1] Ibid.

[2] Ibid.

disorganized, which in turn must result in disorientation of interaction); competitive, "putting-down" behavior is not incompatible with the model provided the base level of sufficient maintenance of face is maintained.

Thus the theory posits that an individual in any interactive situation must be concerned with two types of task: (a) one which is essentially presentational, and (b) one which is essentially responsive. Although his responses may in one perspective be regarded as part of his own line, they must also function to provide feedback information to the other interactant(s). Conversations customarily have a "serve-return," back-and-forth character, in which the two interactive modes, presentational and responsive, can be quite clearly distinguished.

To this point, the model has made reference only to normal face-to-face interaction situations. When interaction is mediated by television the following elements are added:

(1) The presentation of self is directed initially to a camera, rather than immediately face-to-face to the other person(s);

(2) The responses of other(s) are observed on a monitor, not face-to-face;

(3) The perception of context is in part a function of television display.

It is the implications of manipulations made possible by these three forms of televisual mediation which we now want to explore.

Interaction with Self -- the First Experiment

One further derived consequence of televisual mediation is that each person is provided with the capability of observing his own presentation as if he were in the place of the responder. In our first experiment we wished to take advantage of this fact to test one derivation from our model.

The model would lead us to believe that because maintenance of face is a condition of interaction, each interactant must support the lines of others, maintain the other's face, and allow the other to carry off the role he has chosen. Standards of considerateness are to be maintained. This reasoning suggests that, on the average, the responses one gives to another presenter are more favorable than one would give if one were expressing one's true feelings. Conversely, therefore, the presenter consistently receives more positive responses to the image of self he is projecting than he strictly "merits." Thus, we argue, if the presenter could be put in the position of responding to the image he himself is projecting, he should experience a shock. He would discover that his image was less attractive than he had been supposing all along on the basis of others' responses to him.

The hypothesis depends on a certain conceptualization of "self-image." Bateson portrays the "mental world" as an active information-processor which systematically and sequentially "scans" its environment through the organism's senses.[1]

Codification then is the nervous system's method of letting one event

[1]Bateson, Gregory and Jurgen Ruesch. Communication, The Social Matrix of Psychiatry. W.W. Norton Co. 1951, 1968, p. 169.

"stand for" another so that external events, through a series of synaptic firings, can ultimately reach consciousness as an "internal event." But external events are not strictly "reproduced" within the mind. Although events may be experienced as "reflections" or pictures of reality, they have actually undergone systematic transformations. What is perceived is a series of non-random messages, information or patternings which maintain within consciousness systematic relationships to the external event.

> While it is impossible for a man to have inside himself a tree corresponding to the external tree which he perceives, it is possible to have internal objects or events so related to each other that their relations reflect relationships between parts of the external tree.[1]

Shands, reflecting on this process, concludes that any experience of an object or event, which is codified as information, is actually a "process of internalization of shapes and patterns".[2]

This internalization of patterned experience has been compared to the efforts of a map-maker constructing a map or "image" of some territory.[3]

The process of self-observation, we are proposing, is an exercise in "map" or "image" construction. Self-image, for the individual, is a construct which he forms, inferentially, as a result of interaction. Image of self, like image of other, is, in Goffman's phrase, "located in the flow of events."

[1]Ibid., p. 170.

[2]Shands, Harley C. "Outline of a General Theory of Human Communication," Social Science Information, Vol. 4, 1968, p. 66.

[3]Bateson, Gregory. "Form, Substance and Difference," 19th Annual Alfred Korzybski Memorial Lecture, Oceanic Institute, Hawaii, 1970, p. 6.

Codification, however, is a scanning process which deals with a non-random and therefore biased sample of events in the total world.

> If consciousness deals only with a skewed sample of events the total mind, then there must exist systematic, i.e., non-random, differences between the conscious views of self and the world and the true nature of self and the world.[1]

If, as our model suggests, the "skewing" is related to the considerateness of others with respect to one's assumption of face, then the individual faced with the true" image of self (i.e., the image as others perceive it) should experience an unflattering discrepancy between the new perception and his previous self-image. This is the central hypothesis of the first experiment.

The Experiment

In order to test this hypothesis, an experiment was conducted which compared two methods of display in a self-viewing arrangement. The two methods are labeled simultaneous feedback and delayed feedback.

The first condition, the simultaneous arrangement, permitted an individual to view his own creen-image, in real-time, while he performed a list of actions. The set-up was roughly configured as follows:

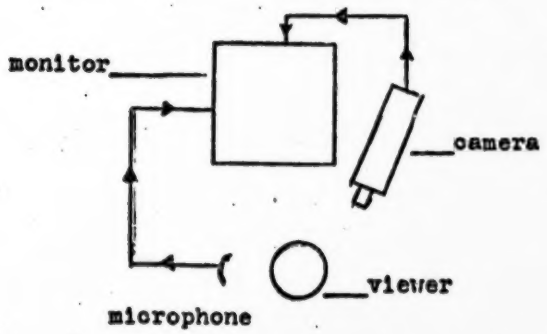

DIAGRAM I. SIMULTANEOUS DISPLAY

[1]Bateson, Gregory. "The Effects of Conscious Purpose on Human Adaptation," Washington, 1969.

In the second method of display, the delayed arrangement, a time-lag of 3.5 seconds was inserted in the "loop" between behavior and its perception as a screen image. This time-delay was intended to establish a "rhythm" between action and reaction.

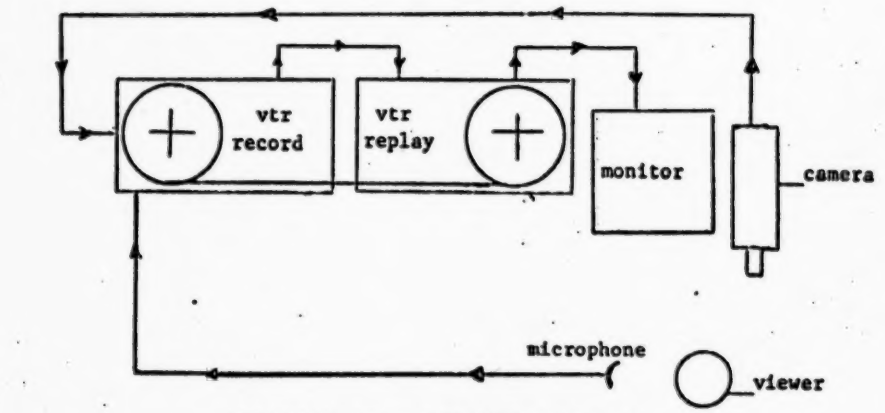

DIAGRAM II. DELAYED DISPLAY

What constitutes the essential difference between simultaneous and delayed conditions (since identical visual information is conveyed by both)? Why should the difference be of theoretical interest?

An individual confronting his screen image in the delayed mode may be compared to a person engaged in a tennis match with an opponent whose style and strategy is exactly the same as his own. Each play he makes is returned to him 3.5 seconds later -- exactly in the manner he served it. The player has become the "target" of his own "hit": of his own message.

In the simultaneous condition, by comparison, we should have to suppose that both players receive and serve simultaneously, action and reaction occur at the same time. We assume this to be impossible. One cannot be both "presenter" and "responder," except by subtly transforming the sense of

the terms"presentation" and "response." When in the act of presentation, the individual is preoccupied with the planning and organization of his own sequences of behavior; he cannot be fully responsive.

In the delayed condition, by contrast, the response to self and presentation is separated in time: there is the opportunity to shift from a presentational to a responsive mode. It is this difference which allows for test of the hypothesis.

Procedure

Twenty-five participants, graduate and undergraduate students from the University of Pennsylvania, Bryn Mawr College and the Philadelphia College of Art were the subjects. Thirteen were assigned to the simultaneous condition and twelve to the delayed. Random assignment was carried out as far as possible. The attempt was made to select subjects who had no prior experience of viewing themselves on television.

Each subject was told he was taking part in a study concerned with "assessing reactions to different methods of television display." He was requested to reserve all questions until after he had undergone the experiment and had filled out a questionnaire. Each participant underwent the experience in isolation.

The participant was asked to sit in a chair which faced a portable television camera and a monitor on which he could see his image and hear his voice. The chair was placed about five feet in front of the camera-monitor system. Subjects were asked to stay in the vicinity of the chair in order to keep most movements within focus and the action at a constant distance from the camera. The participant was then given the following list of actions to perform.[1]

DIRECTIONS

1. Wave at yourself. Say "Hello!" Close your eyes. Shake your head from side to side.
2. Hum a tune.
3. Direct yourself as if you are an orchestra leader.
4. Pretend you are a child. Scold yourself for breaking something.
5. Shake your fist at yourself.
6. Imitate some characteristic of a person you like. Of a person you dislike.
7. Characterize that person with a single action or word.
8. Move your fingers over the contours of your face.
9. Look into the camera for a long time. Stare into the monitor and watch your image.
10. Make faces at yourself.
11. Applaud yourself.
12. Wave goodbye.

Participants were instructed to perform all the actions on the list. Although the subjects were left alone to perform the list of actions, a videotape record was kept of each subject.

The entire situation was usually completed within five minutes for the simultaneous and within seven minutes for the delayed group, at which time the experimenter entered the room, stopped the videotape and gave the subject

[1] Part of this list was adapted from an unpublished paper on videotape by Paul Ryan, written while Ryan was at Fordham University.

a questionnaire to fill out.

Data

Bipolar adjective scales were utilized to tap differences in affective response of the two groups to the self-image experience.

Results

1. Direction -- The mean-ratings on all scales for both groups fell on the same side of the neutral or midpoint: no scale differentiated between the two types of display with respect to the directionality of choices. (See TABLE I)

2. Relative Intensity -- Although both groups' mean scores were similar in direction, the delayed group's mean ratings were more extreme on each of the twelve scales than the simultaneous group's scores. (TABLE II)

Thus the general pattern in the scale data indicated that: (1) while the direction or qualitative" character of the self-viewing experience is similar for both display modes, (2) the general level of "intensity" or extremity differs, being significantly greater for the delayed condition.

The results provide support for our hypothesis. This becomes more evident when individual scales are examined.

Subjects in the delayed condition found the experience significantly more uncomfortable than those in the simultaneous condition. This difference is consistent with the original prediction. Individuals seeing an image of themselves which is less flattering than their expectation would be expected to experience discomfort. The difference between the two groups in meaningfulness is perhaps best explained as a function of the learning about self resulting from the observed discrepancy of observed to imagined self-image.

Some confirmation of this interpretation is provided by the pattern of comments made by subjects in the post-experimental questionnaire.

Responding to a question which called for a description of the television image, the simultaneous group gave relatively unemotional objective descriptions of their screen images. For example,

> "Hazy mirror quality as expected."
>
> "The image was clear, however, if I had seen the same image on normal TV, I would have adjusted the contract button."
>
> "As looking very much like myself....or myself as I think of myself."
>
> "Chinese with glasses. Long hair constantly in my face as I thought, restrained and self conscious, unimaginative actions."
>
> "Fairly accurate like a photo."

The following comments are from the delayed group.

> "Elusive -- but embarrassing."
>
> "When not moving -- very much as I see myself in photos. When moving -- new -- something I've never seen before somewhat exaggerated and unflattering."
>
> "Weird."
>
> "Unexpected -- I am generally surprised by my image -- but this delayed one was even more jarring."
>
> "Fascinating. That's me (!?) Then fear and anxiety.... but all-in-all strange and for some reason funny."
>
> "I have felt a 'spiritual affinity' with my image that may have been self-induced."

Both indications of discomfort and of surprise are evident.

TABLE II. Tests of Significance between Mean-Ratings for Simultaneous and Delayed Display Conditions

scale	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_1-\bar{X}_2$	t	p
comfortable-uncomfortable	.076	1.416	1.340	2.990	.005
meaningful-meaningless	-1.000	-2.000	1.000	2.638	.01
usual-unusual	1.538	2.416	.878	2.041	.05
complete-incomplete	.769	1.583	.812	1.840	.05
important-unimportant	-.385	-1.167	.782	1.857	.05
useful-useless	-.924	-1.584	.660	1.404	.10
beneficial-harmful	-.924	-1.667	.743	1.708	.10
influential-uninfluential	-.084	-.834	.750	1.619	.10
emotional-unemotional	-.385	-.750	.365	.586	ns
pleasureable-painful	-.693	-.663	.030	.054	ns
positive-negative	-1.154	-1.250	.096	.177	ns
educational-mystifying	-.750	-.834	.473	.127	ns

$\bar{X}_1$ = simultaneous group, n = 13
$\bar{X}_2$ = delayed group, n = 12
df = 23
p-values based on 1-tailed distribution
ns = not significant

TABLE I. Significance of the Difference between Mean-Rating and Mid-Point for both Simultaneous and Delayed Display Conditions

	SIMULTANEOUS				DELAYED			
scale	direction	$\bar{X}_1$	t_1	p_1	direction	$\bar{X}_2$	t_2	p_2
usual-unusual	unusual	1.538	3.987	.005*	unusual	2.416	12.537	.0005*
meaningful-meaningless	meaningful	-1.00	5.109	.001	meaningful	-2.000	6.146	.001
beneficial-harmful	beneficial	-.924	2.991	.05	beneficial	-1.667	5.392	.001
useful-useless	useful	-.924	2.807	.05	useful	-1.584	4.715	.001
complete-incomplete	incomplete	.769	3.464	.01	incomplete	1.583	4.182	.001
comfortable-uncomfortable	uncomfortable	.076	.208	ns*	uncomfortable	1.416	5.453	.0005*
important-unimportant	important	-.385	1.809	.10	important	01.167	3.191	01
positive-negative	positive	-1.154	3.464	.01	positive	-1.25	3.045	.05
influential-uninfluential	influential	-.084	.211	ns	influential	-.834	4.025	.01
educational-mystifying	educational	-.750	2.001	.10	educational	-.834	1.561	.20
pleasureable-painful	pleasureable	-.693	1.814	.10	pleasureable	-.663	2.348	.05
emotional-unemotional	emotional	-.385	1.331	ns*	emotional	-.750	1.358	ns*

$\bar{X}_1$ = simultaneous group mean
n = 13
df = 12

$\bar{X}_2$ = delayed group mean
n = 12
df = 11

* indicates 1-tailed test, otherwise 2-tailed, ns= not significant
midpoint = 0.00

Interaction with Other -- the Second Experiment

Face is an investment in one's self-image which is subject to the effects of speculation in the marketplace of interpersonal interaction. Our model of the operation of that market delineates two modes, "presentational" and "responsive,"and identifies feedback as the process of bargaining. Yet feedback is present in interpersonal interaction only when people recognize each other as parties to the interaction and give each other their attention. Attention, too, is a marketable commodity. The presenter uses the attention he receives as confirmation of the effectiveness of his choice of lines, and of his management of his own presentation. The responder gives the attention he assumes is necessary to the presenter, and in this role gains a tool for controlling the presenter's behavior. A negotiation of attention is transacted in which the status conferred by attention is weighed against the control this grants.

The second experiment had two objectives -- (1) to explore the effect of the presence of responsiveness in an interaction, and (2) to explore how attention may be shown and understood in a television-mediated interaction. The first objective was to test the hypothesis that believing a televisually mediated situation is responsive (i.e., that at least one member of the dyad can give an appearance of responding to the presentation of the other) affects the way people feel about it. We looked for a minimal, restrictive response capability and one that would employ the unique visual properties of two-way television.

One set of subjects were encouraged to believe that their manipulation of the TV image of the person talking to them through television (an experimenter confederate) was being monitored by that person. The other set of subjects were told that the person talking had no way of knowing what happened to his picture. In all cases the subject and the confederate had two-

way audio communication, so it was only the video portion which was affected.

The second objective of the experiment was to discover if rules of face-to-face interaction, especially as they relate to attention management, carry over to television. To explore this question, we made the assumption, deriving from the extensive literature on film, that there are psychologically important differences in different kinds of "shot," and that these differences when made available to subjects would be sufficient to make them feel they could vary the attention they gave the other by means of their choice of shot.

Two traditions behind the use of the tight shot are reflected in the controversy over its name. To most of us, nurtured in the Hollywood tradition, a tight shot is familiarly known as a close-up. In the tradition of Eisenstein, however, it is a large shot. "Tight" is neutral ground. Each of the major traditions suggests different social use and conflicting expectations as to the effect of the tight shot in TV-mediated interaction. The difference in traditions is expressed by Eisenstein.

> We refer to the close-up, or as we speak of it, the "large scale."
> This distinction in principle begins with an essence that exists in the term itself.
> We say: an object or face is photographed in "large scale," i.e., large.
> The American says: near, or "close-up."
> We are speaking of the qualitative side of the phenomenon, linked with its meaning....
> Among Americans the term is attached to viewpoint.
> Among us -- to the value of what is seen.*

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*Eisenstein, Sergei. Film Form. New York: Harcourt, Brace & Company, 1949, pp. 237-238.

To Eisenstein's way of thinking the tight shot is a measure of the attention invested in what is pictured. The Hollywood point of view would lead us to think of the "close-up" shot as a measure of physical proximity, associated with the concept of intimacy, or "being close" to someone. This reasoning would lead to the prediction that, for those subjects who believed the confederate to be monitoring their choice of shots, the choice of a tight shot would convey either attention (in the Eisenstein formulation), or intrusion into the personal space of the confederate appropriate to intimacy, in the Hollywood formulation. Since the situation could hardly be identified as intimate, the two formulations lead to different predictions. The rules of appropriate spacing between persons rigidly specify the significance of being either too far or too close. The concept of "close-up" suggests a spatial relationship, and the tight facial shot could be interpreted as too close and consequently too intimate for the relatively un-chummy social context of the experimental interaction. Thus we would predict less use of the tight shot by the subjects believing the speaker aware of their shot choice. On the other hand, assuming the Eisenstein view, attention is flattering, and the prediction would follow that subjects would use more tight shots when they believed the confederate to be monitoring their selection of shots.

This ambiguity of traditional interpretations was to be deservedly rewarded with equally ambiguous experimental results.

The Experiment

Separate rooms were connected by a two-way telephone audio link and a one-way television video link. Subjects were told that they would talk with a high school teacher whom they would also see on their TV monitor and would then be asked to evaluate him, ostensibly for his suitability for teaching over television. As the subjects watched and listened to the teacher, and occasionally asked questions, they could use a hand switch that changed the picture on their monitor between a head-and-shoulders mid-shot and a very tight facial shot. The change was instantaneous, for there were two cameras side by side facing the teacher, one's lens set for the mid-shot, the other for the tight shot. One group of subjects were led to believe that the teacher had in his room a TV monitor which showed the same picture as that on the monitor in the subject's room. The other group were simply told that the teacher had no way of knowing which of the two shots the subject was looking at at any time. In fact, the teacher-confederate had no such monitor and was instructed to shift his glance equally between the two camera lenses. The view on the subjects' monitor was videotaped. After three minutes of interaction, the teacher signed off and the link was ended. Then the subjects were asked to rate the teacher on thirteen bi-polar adjective scales.

Results

Of the thirteen bi-polar adjective scales, only two elicited a significantly different response between the two conditions. The group of subjects who believed the teacher was able to monitor their shot manipulation rated him as significantly more "Present" as opposed to

Table II. Viewing of Tight-Shot by Group of Subjects who Believed Teacher Aware of Their Choice of Shots, and Group that Believed him Unaware

Average Number of Times Tight-Shot Seen

Believed-Aware (n = 9)	2.44 times
Believed-Unaware (n = 9)	2.67 times

Difference not significant.

Within-Group Total Duration of Seeing Tight-Shot

Believed-Aware	658 seconds
Believed-Unaware	595 seconds

Out of a total for each group of 1,620 sec. (9 times 3 minutes)
Difference not significant.

TABLE I. Tests of Significance between Mean-Ratings for "Believed Aware" and "Believed Unaware" Conditions

scale	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_1-\bar{X}_2$	t	p
pleasant-unpleasant	2.000	1.889	0.111	0.206	ns
weak-strong	4.222	3.444	0.778	1.300	ns
close-far	2.444	2.778	0.334	0.518	ns
relaxed-tense	3.667	3.778	0.111	0.124	ns
foolish-wise	5.000	5.333	0.333	0.603	ns
hot-cold	3.778	4.333	0.555	1.126	ns
isolated-present	5.889	4.333	1.556	1.970	.05
cruel-kind	5.556	6.444	0.888	1.860	.05
sociable-unsociable	2.222	2.000	0.222	0.373	ns
egotistic-altruistic	5.111	5.667	0.556	1.148	ns
serious-humorous	2.778	2.333	0.445	0.718	ns
intrusive-reserved	5.111	5.333	0.222	0.434	ns
calm-agitated	2.778	3.444	0.666	0.708	ns

$\bar{X}_1$ = "Believed Aware" group, n= 9
$\bar{X}_2$ = "Believed Unaware" group, n=9
df = 16
p-values based on 1-tailed distribution
ns = not significant

"isolated" than did the group who believed he was not aware of their shot choices. The "believed aware" group also rated the teacher as less "kind" than did the "believed unaware" group. (See TABLE I)

The videotapes were analyzed and the use of the tight shot measured in two ways. First we counted the number of times each subject switched to the tight shot. Second, we added up the total time each subject chose to have the tight shot showing on his monitor. Neither measure elicited any significant difference between the two conditions. (See TABLE II)

Discussion

The first objective of the experiment, to test the effect of people's belief in the responsiveness of a communication situation on thei. feelings about it, yielded an interesting demonstration of the senstivity with which people gauge responsiveness. A significant difference in the Isolated-Present scale is striking in view of the extremely restricted telecommunications link and the relatively minor change introduced by the experimental manipulation. The test group of subjects only believed that the teacher was able to monitor their shot selection; in fact he could not. Subjects must have taken this belief at face value, for there was no way they could have received any confirmation from the teacher that their shot selection had affected him. The less kind rating by the group that believed their camera behavior was monitored suggests two interpretations. More feedback may mean more of a threat. The second interpretation is that subjects were disappointed when their small measure of control was not visibly noticed by the teachers.

On subsequent reflection, it has seemed to us that the fact that no satisfactory results with respect to our second objective should not have

been surprising. One plausible reason is that we underestimated the difficulties inexperienced people would have in performing the relatively simple, from our point of view, business of switching cameras. A second possible explanation is that it takes time and familiarity for practices to become rules and to take on meaning as metacommunication, and subjects found it difficult to understand the behavior appropriate to two-way television. They lacked familiarity. The television link is sufficiently different from face-to-face interaction so that rules carried over from that more natural realm could not easily be re-interpreted in the strange situation we had created. The significance of shot selection as a means to convey messages may not have been clearly understood, and as a result subjects simply were unable to utilize the potential for communication with their opposite member in the dyad. If this latter explanation is correct, it merits further investigation.

The Significance of the Results

The results of the two experiments confirm the dependence of subjects on the information provided to them by the television screen and their sensitivity to the responsiveness of interactive television. This dependence and sensitivity make the individual vulnerable to systematic transformations of available information which are due to the special characteristics of the television system. The experiments reported here contributed little to explaining the type of transformations which may occur as a function of television mediation. The tight-medium shot manipulation produced no clear results. In the remainder of this paper, however, we will attempt to suggest some of the directions future investigations may take.

The question is, of the information concerning the responses of others which we used to guide our own selection of lines of behavior, what is most susceptible to such distortion that it either becomes deceptive or useless?

It has been found that one important cue we use to judge the attentiveness of others comes from eye contact. Eye contact, in usual face-to-face situations, has an inherently democratic character: one cannot look someone in the eye without opening up for a return glance. Mutually attending behavior, expressed by eye contact, develops intricate patterns in normal face-to-face interaction, and is highly expressive of the attention of the responder.

The television system, however, shatters the link of reciprocality. The separation, of camera from monitor, makes it possible to look very closely at the other person without being oneself equally vulnerable: attention without involvement. In addition, given the existing state of television technology, with the physical separation of camera and monitor, an interactant has the choice of looking at the eyes of the blind man on the screen, or of giving him a direct look by staring into a blank circle of glass. One has to choose between a warm appearance which is really unattending (like a skillful performer on mass television), or sincere attendance which, in the face-to-face situation, would usually be construed as an appearance of indifference.

The rules of face-to-face behavior do not appear to carry over to interactive television for eye contact any more than they do, as we saw earlier, for reciprocality of spatial positioning. There is a loss of information. There are other losses. For example, in the face-to-face situation we can look closely at the face of the other without quite losing sight of the rest of his body, which may be yielding up its harvest of useful non-verbal cues. Television is a cookie-cutter that lops off our peripheral vision. Should the other look past the camera, we are shut off from following his gaze. The weak definition of the television monitor compounds the information loss.

The individual in the interactive television situation faces a dilemma. He cannot, as he may with the telephone, ignore the visual cues. He cannot, for example, escape observation, and he must continually try to read the other's behavior. On the other hand, he cannot fully trust the information he gets. Well-learned interpretive procedures fail him. One possibility is that the camera will become both a tool for egoistic display without regard to actual feedback and an instrument of surveillance. In either event, communion goes out of communication, with an accompanying fall from graciousness.

In the model which was developed earlier, it was also posited that the choice of lines of behavior was affected by the definition of the context. To the extent that definition of context is a function of spatial cues, interactive television introduces a further confusion, flowing from the fact that the space depicted on a television monitor is discontinuous with the space of the viewer. There are at least three interpretations the viewer can make.

1) The monitor is simply seen as a camera observing another room. There is no sense of human spatial contact, only the mutual awareness that both participants can see into the respective rooms.
2) The monitor image is taken for itself, not as the image of a distant place. The person in front of the monitor has a conversation with a genii on the screen. If there is a sense of personal space between them, it is between a full man in his room and a little picture on the glass.

3) The person in front of the monitor enters the space frame of the monitor, accepting the physical setting of the person seen there. Eye-contact by the monitor image is considered as direct to the viewer's eyes. There is a sense of personal space based on entering the space frame of the TV screen.

The implications for definition of context in each case are quite different.

If interactive television takes away some sources of information, it also adds others, as the first experiment was intended to illustrate. As part of our continuing exploration of the range of possibilities of interactive television at the Annenberg School, we have been working with the use of the superimposition and split screen. Among other results was a quite explicit erotic exchange which illustrates some unique characteristics of interactive television. When the system is wedded to tape playback units, computers, and special types of visual display systems, the potential for certain kinds of enhancement of interaction is created.

The use of interactive television will grow rapidly. It will be a task of research to discover how people adapt their responsive behavior to the imperatives of television transmission.